## **CLAIMS**

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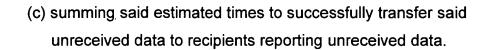
- 1. A method of transferring data from a distributor to a plurality of recipients comprising the steps of:
  - (a) broadcasting unreceived data to said recipients;
  - (b) repeating step (a) until a time for transferring said unreceived data by point-to-point communication with said recipients obtains a predetermined relationship to a time for said broadcasting; and,
  - (c) thereafter, transferring said unreceived data by point-to-point communication with at least one said recipient.
- 2. The method of claim 1 wherein the step of repeating said broadcasting of unreceived data until a time for transferring said unreceived data by point-to-point communication with said recipients obtains a predetermined relationship to a time for said broadcasting comprises the steps of:
  - (a) estimating a time to transfer said unreceived data by point-topoint communication with said recipients, and
  - (b) repeating said broadcasting of unreceived data if said time to transfer said unreceived data by point-to-point communication is greater than said time to broadcast said data.
- 3. The method of claim 2 wherein the step of estimating a time to transfer said unreceived data by point-to-point communication with said recipients comprises the steps of:
  - (a) polling at least one recipient to identify for unreceived data said recipient;
  - (b) estimating a time to successfully transfer said unreceived data to said recipient by point to point communication; and

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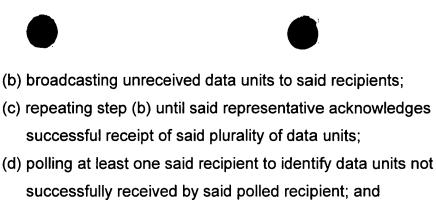


- 4. The data transfer method of claim 1 wherein the step of repeating broadcast of said unreceived data until a time for transferring said unreceived data by point-to-point communication with said recipients obtains a predetermined relationship to a time for said broadcasting comprises the steps of:
  - (a) estimating a time to transfer said unreceived said data by pointto-point communication with said recipients,
  - (b) estimating remaining unreceived data following an additional broadcast of said data; and
  - (c) rebroadcasting said unreceived data if said time to transfer said unreceived data by point-to-point communication with said recipients is greater than a sum of said time to broadcast said data and a time to transfer said remaining said unreceived data by point-to-point communication.
- 5. The method of claim 4 wherein the step of estimating a time to transfer said unreceived data by point-to-point communication with said recipients comprises the steps of:
  - (a) polling at least one recipient to identify unreceived data for said recipient;
  - (b) estimating a time to successfully transfer said unreceived data to said recipient by point to point communication; and
  - (c) summing said estimated times to successfully transfer said unreceived data to recipients reporting unreceived data.
- 6. A method of transferring a plurality of data units from a distributor to a plurality of recipients comprising the steps of:
  - (a) designating a representative recipient;

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- (e) transferring said unreceived data units to said polled recipient by point-to-point communication.
- 7. The method of claim 6 wherein the step of designating a representative
  recipient comprises the steps of:
  - (a) broadcasting a plurality of data units to said recipients;
  - (b) polling at least one said recipient to establish success in receiving said data units; and
  - (c) designating as said representative said recipient having said success most representative of said success of said plurality of recipients.

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8. The method of claim 6 wherein the step of designating a representative recipient comprises the steps of:

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- (a) broadcasting a plurality of data units to said recipients;
- (b) polling a first recipient following a broadcast of said data units to identify said unreceived data units for said polled recipient;
- (c) repeating step (b) for a plurality of recipients; and

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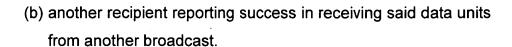
- (d) designating as said representative said recipient reporting said unreceived data most representative of said unreceived data reported by said polled recipients.
- 9. The method of claim 6 further comprising the steps of:
  - (a) a first recipient reporting success in receiving said data units from said first broadcast; and

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- 10. A method of transferring data from a data distributor to a plurality of data recipients comprising the steps of:
  - (a) broadcasting unreceived data to said recipients;
  - (b) polling at least one said recipient to identify unreceived data;
  - (c) estimating a time for transferring said unreceived data to said plurality of recipients by point-to-point communication with said recipients;
  - (d) repeating steps (a) through (c) until said point-to-point communication time achieves a predetermined relationship to a time required to broadcast said data; and,
  - (f) thereafter, transferring said unreceived data by point-to-point communication with said data recipients.
- 11. The method of claim 10 wherein the step of polling at least one recipient following a broadcast of said data to identify said unreceived data comprises the steps of:
  - (a) polling a plurality of said recipients following a broadcast of said data to identify said unreceived data for each said polled recipient;
  - (b) identifying a representative recipient reporting said unreceived data most representative of said unreceived data reported by all polled recipients; and
  - (c) said representative recipient reporting the identify said unreceived data on behalf of all said recipients following a subsequent broadcast.

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- 12. The method of claim 10 wherein the step of polling at least one recipient following a broadcast of said data to identify said unreceived data comprises the steps of:
  - (a) polling a first recipient following a broadcast to identify said unreceived data for said polled recipient;
  - (b) polling another recipient following another broadcast of said data to identify said unreceived data for said another polled recipient;
  - (c) repeating step (b) for all polled recipients;
  - (d) identifying a representative recipient reporting unreceived data most representative said unreceived data reported by said polled recipients; and,
  - (e) thereafter, said representative recipient reporting said unreceived data for said recipients following a broadcast of said data.
- 13. The method of claim 10 wherein the step of repeating said broadcasting of said unreceived data until said time to transfer said unreceived data by point-to-point communication with said recipients achieves a predetermined relationship to said time for said broadcasting comprises the steps of:
  - (a) determining a time to transfer said unreceived data by point-topoint communication with each said recipient,
  - (b) estimating remaining unreceived data to be transferred after an additional broadcast of said data; and
  - (c) broadcasting said unreceived data again if said time to transfer said unreceived data by point-to-point communication with said recipients is greater than a sum of said time to broadcast said data and a time to transfer said estimated remaining unreceived data by point-to-point communication.
- 14. The data transfer method of claim 10 wherein the step of repeating said30 broadcasting of said unreceived data until a time for transferring said

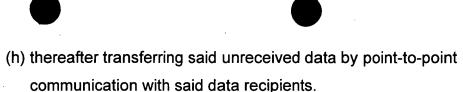
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unreceived data by point-to-point communication with said recipients achieves a predetermined relationship to a time for said data broadcasting comprises the steps of:

- (a) determining a time to transfer said unreceived data by point-topoint communication with each recipient, and
- (b) repeating said data broadcasting if said time to transfer said unreceived data by point-to-point communication is greater than said time to broadcast said data.
- 10 15. The method of claim 10 further comprising the step of transmitting said unreceived data by point-to-point communication following a predetermined number of broadcasts of said data.
  - 16. A method of transferring data from a data distributor to a plurality of data recipients comprising the steps of:
    - (a) broadcasting unreceived data to said recipients;
    - (b) polling said recipients to identify unreceived data;
    - (c) identifying a representative recipient reporting unreceived data most representative of said unreceived data reported by said polled data recipients;
    - (c) estimating a time for transferring unreceived data to said plurality of recipients by point-to-point communication with each recipient;
    - (d) rebroadcasting said data to said recipients if said estimated time to transfer said unreceived data by point-to-point communication is less than a time required to broadcast said data;
    - (e) polling said representative to identify said unreceived data; and
    - (f) repeating steps (c), (d), and (e) until said estimated time to transfer said unreceived data by point-to-point communication is less than a time required to broadcast said data; and



- 17. A method of transferring a plurality of data units from a distributor to a plurality of recipients comprising the steps of:
  - (a) broadcasting a plurality of data units to said recipients;
  - (b) polling at least one said recipient to establish success in receiving said data units;
  - (c) comparing said success of at least two recipients;

 (d) designating as a representative said recipient having said success most representative of said success of said plurality of recipients;

- (e) broadcasting data units to said recipients;
- (f) repeating step (e) until said representative acknowledges successful receipt of said plurality of data units;
- (g) polling at least one said recipient to identify data units not successfully received by said recipient; and,
- (h) thereafter, transferring said unreceived data units to said recipient by point-to-point communication.

18. A method of transferring a plurality of data units from a distributor to a plurality of recipients comprising the steps of:

- (a) broadcasting said plurality of data units to said recipients;
- (b) a first recipient identifying unreceived data following a broadcast of said data;
- (c) rebroadcasting said plurality of data units to said recipients;
- (d) another recipient identifying unreceived data following said rebroadcast of said data;
- (e) comparing said unreceived data identified by said recipient and said unreceived data identified said another recipient;

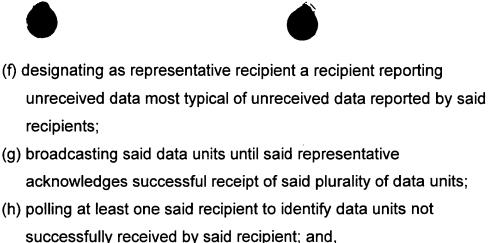
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- (h) polling at least one said recipient to identify data units not
- (i) thereafter, transferring said unreceived data units to said recipient by point-to-point communication.

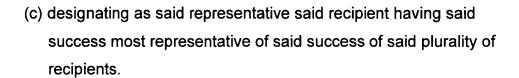
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- 19. A method of transferring a plurality of data units from a distributor to a plurality of recipients comprising the steps of:
  - (a) designating a representative recipient;
  - (b) broadcasting a data unit to said recipients;

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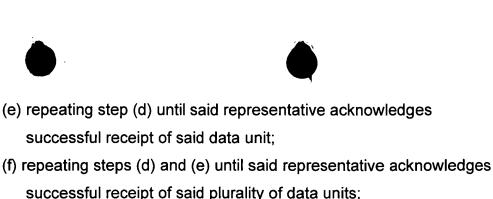
- (c) repeating step (b) until said representative acknowledges successful receipt of said data unit;
- (d) repeating steps (b) and (c) until said representative acknowledges successful receipt of said plurality of data units;
- (e) polling at least one said recipient to identify data units not successfully received by said polled recipient; and
- (f) transferring said unreceived data units to said polled recipient by point-to-point communication.
- 20. The method of claim 19 wherein the step of designating a representative 25 recipient comprises the steps of:
  - (a) broadcasting a plurality of data units to said recipients;
  - (b) polling at least one said recipient to establish success in receiving said data units; and

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- 5 21. The method of claim 19 wherein the step of designating a representative recipient comprises the steps of:
  - (a) broadcasting a plurality of data units to said recipients;
  - (b) polling a first recipient following a broadcast of said data to identify unreceived data for said polled recipient;
  - (c) repeating steps (a) and (b) for a plurality of recipients; and
  - (d) designating as said representative said recipient reporting said unreceived data most representative of said unreceived data reported by said polled recipients.
- 15 22. The method of claim 19 further comprising the steps of:
  - (a) a first recipient reporting success in receiving said data units from said first broadcast; and
  - (b) another recipient reporting success in receiving said data units from another broadcast.
  - 23. A method of transferring a plurality of data units from a distributor to a plurality of recipients comprising the steps of:
    - (a) broadcasting a plurality of data units to said recipients;
    - (b) polling at least one said recipient to establish success in receiving said data units;
    - (c) designating as a representative said polled recipient having said success most representative of said success of said plurality of recipients;
    - (d) broadcasting a data unit to said recipients;

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- (g) polling at least one said recipient to identify data units not successfully received by said recipient; and,
- (h) thereafter, transferring said unreceived data units to said recipient by point-to-point communication.
- 10 24. A method of transferring a plurality of data units from a distributor to a plurality of recipients comprising the steps of:
  - (a) broadcasting said plurality of data units to said recipients;
  - (b) identification of unreceived data by a first recipient following said broadcast of said data;

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- (c) rebroadcasting said plurality of data units to said recipients;
- (d) identification of unreceived data by another recipient following said rebroadcast of said data;
- (e) comparing said unreceived data identified by said recipient and unreceived data identified by said another recipient;

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- (f) designating as representative recipient a recipient reporting unreceived data most typical of unreceived data reported by all recipients;
- (g) broadcasting a data unit until said representative acknowledges successful receipt of said of data unit;

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- (h) repeating step (g) until said representative acknowledges successful receipt of said plurality of said data units;
- (i) polling at least one said recipient to identify data units not successfully received by said recipient; and,

(j) thereafter, transferring unreceived data units to said recipient by point-to-point communication.